

Java mapping for pragmatic programmers



October 18, 2013

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Scala Edition

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Disclaimer

- I'm not a Scala expert.
- Actually, I do not know Scala at all.
- Lets discuss today not implementations, but ideas staying behind them.

Agenda

1. Express Scala Course
2. Parser combinators (xRools)
3. JAXB plugin
4. Scala Macros (yajom)
5. Q&A, Discussion

Express Scala Course

- Not a full Scala description
- Not a functional programming course
- The main task of “course” is to help read Scala code, not write
- Java8 is recommended background

Java

Scala

```
final String a = "a";  
String b = "b";  
  
void setC(C c) {  
    this.c = c;  
}  
  
int inc(int a) {  
    return a + 1;  
}
```

Java

```
final String a = "a";  
String b = "b";  
  
void setC(C c) {  
    this.c = c;  
}  
  
int inc(int a) {  
    return a + 1;  
}
```

Scala

```
val a : String = "a"  
var b = "b"  
  
def setC(c:C):Unit =  
{  
    this.c = c;  
}  
  
def inc(a:Int) = a+1
```

Java

Scala

```
List<A> list =  
    new ArrayList<>();  
  
int l = list.size();  
  
int[] arr;  
int x = arr[5];  
  
list.filter(  
    a -> a.hasB()  
) .map(a -> new B(a))
```


Java

```
List<A> list =  
    new ArrayList<>();  
  
int l = list.size();  
  
int[] arr;  
int x = arr[5];  
  
list.filter(  
    a -> a.hasB()  
) .map(a -> new B(a))
```

Scala

```
val list : List[A] =  
    new ArrayList[A]()  
  
val l = list.size  
  
var arr : Array[Int]  
val x: Int = arr(5)  
  
list  
  .filter(_ .hasB)  
  .map(a => new B(a))
```

xRools

- Written by Scala experts from Kiev
- XPath like DSL
- Extendable by Scala code
- XML oriented

xRools

Talk is cheap. Show me the code.

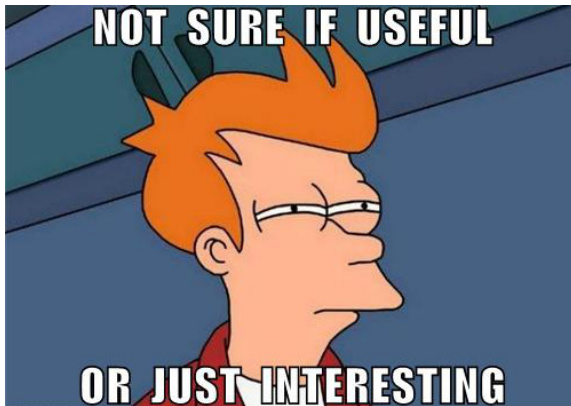
xRools Pros

- Scala
- Non-developers write rules
- Dashboard

xRools Cons

- Scala
- Non-developers write rules
- No compile-time checks
- Uses reflection
- No real IDE support
- Functions defined away from its only usage
- Debugging?

xRools



JAXB plugin

- Written by Sergey Armensky (idea of Andrey Vytnov?)
- Plain Java (new method added for each property)
- Will be soon in production
- Have nothing to do with Scala

JAXB plugin

Talk is cheap. Show me the code.

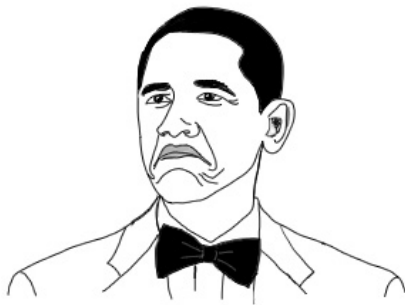
JAXB plugin Pros

- Pure Java
- Simple and clean
- Simplify some code

JAXB plugin Cons

- Only for JAXB generated classes
- Simplify only some code
- Not declarative enough
- Not mapper at all

JAXB Plugin



NOT BAD

Can we do better?



CHALLENGE ACCEPTED

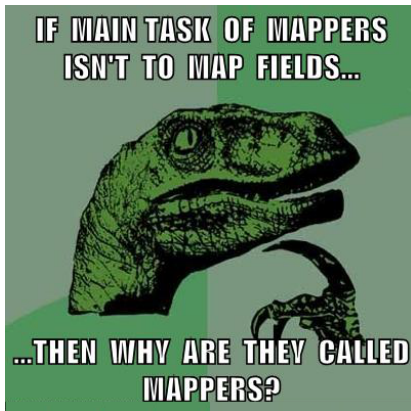
Scala related features

- Implicits of all kinds
- Point-free style
- Scala virtualized
- Macros

Yajom

- Yet Another Java Object Mapper
- Based on implicits and Scala macros
- All reflection is done in compile-time
- Easy to configure, extend or derive
(having no clue about Scala Macros at all)

Philosoraptor



Java with JAXB plugin

```
100 A a = from.getA();
101 if (from.isVerySpecial()) {
102     B b = defaultB;
103     if (a != null) {
104         B realB = a.getB();
105         if (realB != null)
106             b = realB;
107     }
108     to.c().setB(b);
109 }
```


Option-based yajom

```
100 val option = {  
101     val a = from.getA  
102     if (from.isVerySpecial) {  
103         var b = defaultB  
104         if (a != null) {  
105             val realB = a.getB  
106             if (realB != null)  
107                 b = realB  
108         }  
109         Some(b)  
110     } else None  
111 }  
112 yajomOption(to.getC.setB)(option)
```

Option-based yajom

```
100 yajomOption(to.getC.setB) {  
101     val a = from.getA  
102     if (from.isVerySpecial) {  
103         var b = defaultB  
104         if (a != null) {  
105             val realB = a.getB  
106             if (realB != null)  
107                 b = realB  
108         }  
109         Some(b)  
110     } else  
111         None  
112 }
```

Option-based yajom with maybe

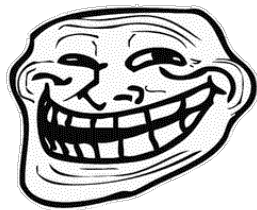
```
100 yajomOption(to.getC.setB) {  
101     if (from.isVerySpecial) {  
102         val b = maybe(from.getA.getB)  
103         Some(b.getOrElse(defaultB))  
104     } else  
105         None  
106 }
```

Talk is cheap. Show me the code.

- Scala
- Compile-time bulletproof
- IDE support
- Works with any classes without any changes
- No problem with debugging

Yajom Cons

- Scala
- Maybe not mature enough



Yajom



<https://github.com/gark87/yajom>

Thank You!